SOFTWARE CONFIGURATION MANAGEMENT AT NATIONAL CANCER INSTITUTE

Sarah Elkins

USENIX UCMS ’14

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AGENDA

- Introductions
- SCM at NCI Process Flow to Production
- Technologies and Integration Capabilities
- Future
- Q&A



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INTRODUCTIONS

- Sarah Elkins
- National Cancer Institute (NCI)
- Software Configuration Management team at NCI (we're hiring! Join us!)



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Sarah Elkins

- 20+ years software configuration management (version control and collaborative tools administration, build and deploy automation, release management, change control, reporting & metrics)
- 6 years contracting at National Cancer Institute (NCI)
- Software Configuration Management team: part of IT Infrastructure Support Services (SRA International)

NATIONAL CANCER INSTITUTE

- US Federal Government's principal agency for cancer research and training
- Also disseminates health information
- Part of National Institutes of Health (NIH) under Health and Human Services (HHS)

SCM AT NCI

- Mission: support the science!
  - Recreatable software
  - Development and deployment support
- SCM service/tool administration
- Automation setups for builds and deploys to a variety of container technologies
- SCM-related process facilitation



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HIGH-LEVEL PROCESS FLOW

- Work with dev and infrastructure teams
- Technology Catalog (6-month update cycle)
- Architecture Review Checklist (per project)
- Source code repository creation (if needed)
- Initial (lowest tier) build and deploy setup
- Once set up, lower-tier builds/deploys are performed by Dev/QA teams
- Stage, Prod tiers: by Infrastructure team



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SCM CHALLENGES

- Over 600 web sites from static HTML to complex bioinformatics applications (on multiple tiers: thousands of servers)
- Heterogenous environment (operating systems, container technologies, physical servers, VMs, etc.)
- Developers range from lone scientists to large contractor teams (different development approaches / levels of formality)



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TECH: VERSION CONTROL

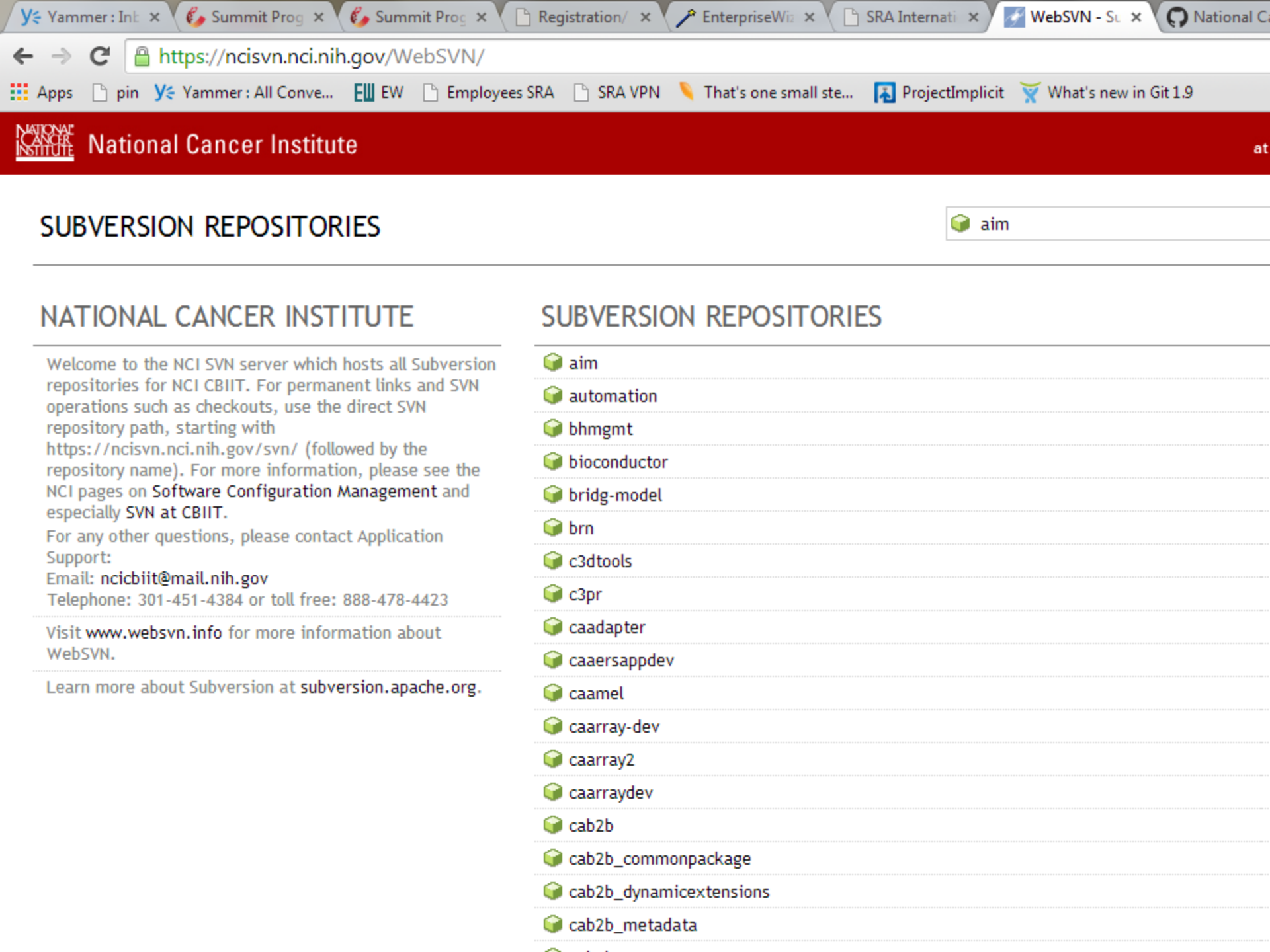
- ~~CVS~~
- Subversion
- Git



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SUBVERSION

- SCM administers hundreds of SVN repositories, with most viewable by public
- Some migrated from CVS
- 100+ are now read-only (projects retired or migrated to Git)
- https://ncisvn.nci.nih.gov/
- Metadata: https://ncisvn.nci.nih.gov/WebSVN/


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Apps
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Employees SRA
SRA VPN
That's one small ste...
ProjectImplicit
What's new in Git 1.9
National Cancer Institute
at
SUBVERSION REPOSITORIES
aim
NATIONAL CANCER INSTITUTE
Welcome to the NCI SVN server which hosts all Subversion repositories for NCI CBIIT. For permanent links and SVN operations such as checkouts, use the direct SVN repository path, starting with https://ncisvn.nci.nih.gov/svn/ (followed by the repository name). For more information, please see the NCI pages on Software Configuration Management and especially SVN at CBIIT.
For any other questions, please contact Application Support:
Email: ncicbiit@mail.nih.gov
Telephone: 301-451-4384 or toll free: 888-478-4423
Visit www.websvn.info for more information about WebSVN.
Learn more about Subversion at subversion.apache.org.
SUBVERSION REPOSITORIES
aim
automation
bhmgmt
bioconductor
bridg-model
brn
c3dtools
c3pr
caadapter
caaersappdev
caamel
caarray-dev
caarray2
caarraydev
cab2b
cab2b_commonpackage
cab2b_dynamicextensions
cab2b_metadata

GIT

- Public GitHub channel (community engagement) is https://github.com/NCIP/
- Another more private channel for NCI-funded development work (e.g., contract projects)
- A few other repositories on other channels
- SCM mirrors locally, read-only, for builds (and backup – NCI policy)



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Yammer : Inbox | Summit Prograr | Summit Prograr | Registration/Lo | EnterpriseWizar | SRA Internationa | National Cancer
GitHub, Inc. [US] https://github.com/ncip
Apps | pin | Yammer : All Conve... | EW | Employees SRA | SRA VPN | That's one small ste... | ProjectImplicit | What's new in Git 1.9
Search or type a command | Explore | Gist | Blog | Help

National Cancer Informatics Program

Rockville, MD | http://ncip.nci.nih.gov/ | opensource@nci.nih.gov

Filters | Find a repository...

national-biomedical-image-archive

Java ★1 5

The National Biomedical Imaging Archive (NBIA) is a free and open source service and software application that enables users to securely store, search, and download diagnostic medical images, providing a searchable national repository integrating in vivo cancer images with clinical and genomic data. Using role-based security, NBIA provides web-based access to de-identified DICOM images, image markup, annotations, and rich meta data.

Updated 2 days ago

catissue-core

Java ★1 3

caTissue Suite is a modular, open-source, specimen inventory and tracking system.

Updated 3 days ago

alview

C ★0 0

Members





TECH: BUILDS AND DEPLOYS

- Ant, Maven
- Sonatype Nexus
- AnthillPro

… deployed to to JBoss, Tomcat containers etc. on Linux; also some Windows



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BUILDS

- SCM supports Ant, Maven use (+ Grails?)
  - Developers write the build scripts (.xml files)
  - SCM provides examples, works with developers, troubleshoots build issues
- Continuous Integration (CI): not mandated
  - Some projects make heavy use (others not)
  - Mostly more for builds and unit tests than deploys or run-time testing



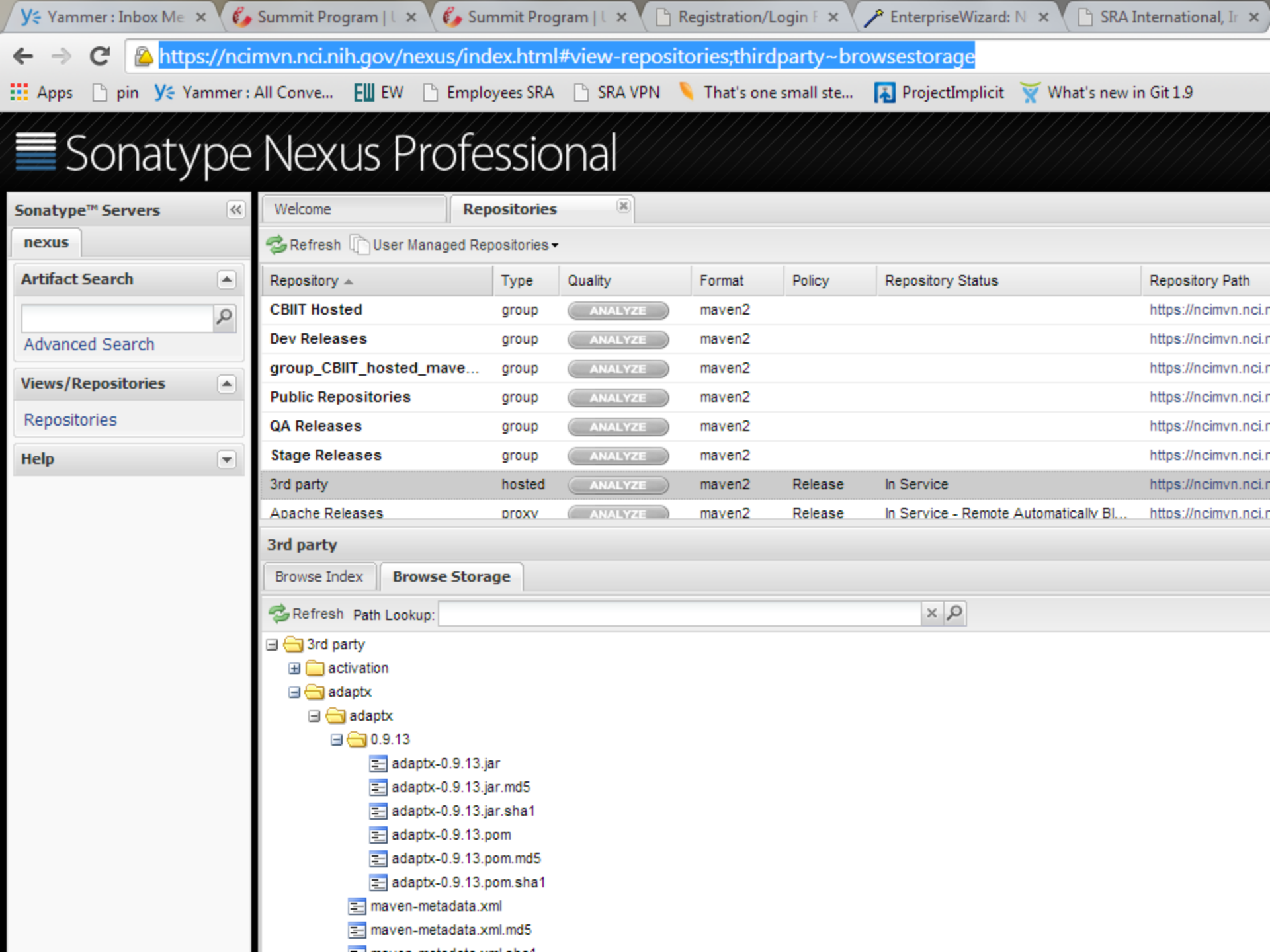
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BUILD DEPENDENCY MANAGEMENT

- Some legacy Ivy repositories
- Main artifact repository host: Nexus
  http://ncimvn.nci.nih.gov/
- Proxies and locally built/customized binaries



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Yammer : Inbox Me
Summit Program | L
Summit Program | L
Registration/Login F
EnterpriseWizard: N
SRA International, Ir
https://ncimvn.nci.nih.gov/nexus/index.html#view-repositories;thirdparty~browsestorage
Apps
pin
Yammer : All Conve...
EW
Employees SRA
SRA VPN
That's one small ste...
ProjectImplicit
What's new in Git 1.9
Sonatype Nexus Professional
Sonatype™ Servers
nexus
Artifact Search
Advanced Search
Views/Repositories
Repositories
Help
Welcome
Repositories
Refresh
User Managed Repositories
Repository
Type
Quality
Format
Policy
Repository Status
Repository Path
CBIIT Hosted
group
ANALYZE
maven2
https://ncimvn.nci.n
Dev Releases
group
ANALYZE
maven2
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group_CBIIT_hosted_mave...
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https://ncimvn.nci.n
Public Repositories
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ANALYZE
maven2
https://ncimvn.nci.n
QA Releases
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ANALYZE
maven2
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Stage Releases
group
ANALYZE
maven2
https://ncimvn.nci.n
3rd party
hosted
ANALYZE
maven2
Release
In Service
https://ncimvn.nci.n
Apache Releases
proxy
ANALYZE
maven2
Release
In Service - Remote Automatically Bl...
https://ncimvn.nci.n
3rd party
Browse Index
Browse Storage
Refresh
Path Lookup:
3rd party
activation
adaptx
adaptx
0.9.13
adaptx-0.9.13.jar
adaptx-0.9.13.jar.md5
adaptx-0.9.13.jar.sha1
adaptx-0.9.13.pom
adaptx-0.9.13.pom.md5
adaptx-0.9.13.pom.sha1
maven-metadata.xml
maven-metadata.xml.md5

BUILD AND DEPLOY AUTOMATION MANAGEMENT

- SCM ties it all together with AnthillPro
- Integrates with other tools, e.g., testing (Junit, Selenium, HP Quality Suite), issue tracking (JIRA), notifications
- Very flexible, powerful … can overwhelm someone who just wants their build/deploy
- Individual application project setups
- Template and library job creation for standardization and re-use, balanced against responsiveness to varied needs



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FUTURE

- More automation of deploys currently done manually, e.g., Drupal, remaining Windows and flat sites
- More tech/tool changes (e.g., AnthillPro end of life) … modular approach
- More automation of processes (workflows)
- More integration: transparency (dashboards), technology *stacks*?

THANK YOU!

Any questions?

- configures@sarahelkins.org
- @configures
- https://pinboard.in/u:configures/t:cm

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